

Biological Analysis Report

WQAP-2017-10-20-02

Florida Department of Environmental Protection
Central Laboratory
2600 Blair Stone Road
Tallahassee, FL 32399-2400
DOH Accreditation E31780

Event Description: **Pinellas LR3**
Request ID: **RQ-2017-10-16-48**
Customer: **WQAP**
Project ID: **SMP**

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Certified by: Jennifer Walters, Environmental Manager

Date Certified: 08-DEC-2017 16:26

A handwritten signature in black ink, appearing to read "J Walters", is positioned below the "Certified by" text.

Case Narrative

Unless otherwise noted, all samples included in this report were received in accordance with protocols referenced in Chapter 62-160, Florida Administrative Code (F.A.C.). Results published in this report pertain only to the samples as submitted to, and received by the laboratory. All times in this report are adjusted to the applicable Eastern Time Zone (EST or EDT).

Results for the following analytical group are included in this report: Molecular.

Scientific notation may be used in reporting very large or small values. Values reported using scientific notation will take the form of the following example: 1.3E+03, which is equivalent to 1.3×10^3 or 1300.

Unless otherwise noted, analytical values for soil and sediment samples are reported on a dry weight basis, and analytical values for waste and tissue samples are reported on a wet weight basis.

Results for TNI accredited tests met requirements established by The NELAC Institute. A double asterisk (**) is used to indicate an analyte/matrix/method for which the laboratory is not TNI accredited or where accreditation for that field of testing is not applicable.

Any significant anomalies or deviations from established protocols are documented in Non-Conformance Reports, which, where appropriate, are included within this analytical report. Additional comments related to specific analytical tests may be included as remarks following the analytical results for each sample. Such comments and remarks are for informational purposes only and are not intended to convey judgement about the usability of the reported data.

A quality control report on the performance of the test method for the submitted samples is included. Uncertainty associated with the analytical results contained in this report can be estimated from the reported quality assurance results and from published quality control acceptance limits for each analytical test. Matrix quality control results (matrix spike recoveries and matrix sample precision) pertain only to the matrix sample tested and do not necessarily reflect test method performance for other samples.

Typical matrix quality control (QC) measurements may include matrix spike recovery, matrix spike duplicate recovery, matrix spike precision and matrix sample precision. Not all matrix QC results may be available or reportable; where they are not an explanation is provided. Typical reasons for unavailable QC results include, but are not limited to, a) insufficient matrix sample to perform some or all QC measurements; b) analyte concentration in the sample replicated was too low for a meaningful measurement of precision and c) analyte concentration in the matrix sample spiked was too high (relative to the amount of analyte spiked) for a meaningful measurement of recovery. Where matrix QC results are unavailable, other method performance metrics (e.g., LCS recovery, LCS precision, surrogate recovery) may be used to assess performance of the method. Comments explaining any missing QC measurements are not intended to convey any adverse conclusions about the quality of the reported data.

Precision is reported as relative percent difference unless otherwise noted.

Quality Control codes as defined below may be used in this report to indicate results that are associated with one or more quality control elements which did not fall within established test method criteria. Such results may be qualified as estimates using a J qualifier as required by 62-160 F.A.C. Explanations are included in the report for any results that were reported as estimates for other reasons.

QC Codes used in this report may include:

- LCS – Recovery for the batch Laboratory Control Sample (LCS) was outside existing control limits;
- MS – Recovery for the batch matrix spike (MS) was outside existing control limits;
- CCV – Recovery for a continuing calibration verification (CCV) standard was outside existing control limits;
- SUR – Recovery of a surrogate (SUR) for associated analytes was outside existing control limits;
- RPD – The precision, measured as relative percent difference (RPD), of batch replicate measurements was outside existing control limits;
- RSD – The precision, measured as relative standard deviation (RSD), of batch replicate measurements was outside existing control limits;
- SMP – Sample - used precision derived from replicate analyses of a sample;

The following data qualifiers are used, where applicable, in this report as specified in 62-160 F.A.C.

- A - Value reported is the mean of two or more determinations.
- B - Results based on colony counts outside the acceptable range.
- I - The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit.
- J - Estimated value and/or the analysis did not meet established quality control criteria.
- K - Actual value is known to be less than value given.
- L - Actual value is known to be greater than value given.
- N - Presumptive evidence of presence of material.
- O - Sampled, but analysis lost or not performed.
- Q - Sample held beyond normal holding time.
- T - Value reported is less than the criterion of detection.
- U - Material was analyzed for but not detected. The reported value is the method detection limit for the sample analyzed.
- V - Analyte was detected in both sample and method blank.
- X - Too few individuals to calculate SCI value.
- Y - The laboratory analysis was from an unpreserved or improperly preserved sample. The data may not be accurate.
- Z - Colonies were too numerous to count (TNTC).

Quality control information from overflow laboratories may not be included in this report. Please refer to the associated report from the overflow laboratory for additional information.

Sample Location: Alligator Creek PC Site 14-10

Collection Date/Time: 10/19/2017 12:29

Field ID: G1SW0057

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1938974	SOP-PCR-1.0	HF183-qPCR**	94	U	GEU/100 mL	P333715	
	SOP-PCR-4.0	HF183 - Human Source Marker**	Below Threshold				

Ref. Method and Comment:
SOP-PCR-1.0: No amplification of HF183 marker.

Sample Location: Bishop Creek PC Site 12-04

Collection Date/Time: 10/19/2017 13:12

Field ID: G1SW0061

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1938972	SOP-PCR-1.0	HF183-qPCR**	94	U	GEU/100 mL	P333715	
	SOP-PCR-1.2	GULL2-qPCR**	5.6E+03	U	TSC/100 mL	P333715	
	SOP-PCR-1.3	GFD-purified-qPCR**	130	IJ	TSC/100 mL	P334951	LCS, MS
	SOP-PCR-1.4	BacR-qPCR**	1.0E+03	U	TSC/100 mL	P333715	
	SOP-PCR-4.0	HF183 - Human Source Marker**	Above Threshold				

Ref. Method and Comment:
SOP-PCR-1.0: No amplification of HF183 marker.
SOP-PCR-1.2: No amplification of GULL2 marker.
SOP-PCR-1.3: Quality control failure(s) observed. See QA report for details.
SOP-PCR-1.4: No amplification of BACR marker. Precision data unavailable.

Sample Location: Bishop Creek PC Site 12-02

Collection Date/Time: 10/19/2017 11:30

Field ID: G1SW0063

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1938973	SOP-PCR-1.0	HF183-qPCR**	26	T	GEU/100 mL	P333715	
	SOP-PCR-1.2	GULL2-qPCR**	4.2E+03	U	TSC/100 mL	P333715	
	SOP-PCR-4.0	HF183 - Human Source Marker**	Above Threshold				

Ref. Method and Comment:
SOP-PCR-1.2: No amplification of GULL2 marker.

Quality Assurance Report Method Blank Results

Reference Method: SOP-PCR-1.0
Batch ID: P333715

Component	Result	Code	Units
HF183-qPCR	280	U	GEU/100 mL
HF183-qPCR	280	U	GEU/100 mL

Reference Method: SOP-PCR-1.2
Batch ID: P333715

Component	Result	Code	Units
GULL2-qPCR	1.7E+04	U	TSC/100 mL

Reference Method: SOP-PCR-1.3
Batch ID: P334951

Component	Result	Code	Units
GFD-purified-qPCR	340	U	TSC/100 mL

Quality Assurance Report Method Blank Results

Reference Method: SOP-PCR-1.4
Batch ID: P333715

Component	Result	Code	Units
BacR-qPCR	3.0E+03	U	TSC/100 mL

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SOP-PCR-1.0
Batch ID: P333715

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
HF183-qPCR	117	105	P/P	50 - 175
HF183-qPCR	88.9	90.4	P/P	50 - 175

Reference Method: SOP-PCR-1.2
Batch ID: P333715

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GULL2-qPCR	98.8	143	P/P	50 - 300

Reference Method: SOP-PCR-1.3
Batch ID: P334951

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GFD-purified-qPCR	149	26.7	P/F	50 - 175

Reference Method: SOP-PCR-1.4
Batch ID: P333715

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
BacR-qPCR	113	129	P/P	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.0
Batch ID: P333715

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1938840	HF183-qPCR	83.1		P	50 - 175
1938841	HF183-qPCR	92.8		P	50 - 175
1938842	HF183-qPCR	102	80.5	P/P	50 - 175
1938843	HF183-qPCR	80.7		P	50 - 175
1938972	HF183-qPCR	81.0		P	50 - 175
1938973	HF183-qPCR	93.2		P	50 - 175
1938974	HF183-qPCR	81.2		P	50 - 175
1939007	HF183-qPCR	62.1		P	50 - 175
1939008	HF183-qPCR	99.6		P	50 - 175
1939009	HF183-qPCR	82.6		P	50 - 175
1939010	HF183-qPCR	82.9		P	50 - 175
1939200	HF183-qPCR	70.9		P	50 - 175
1939201	HF183-qPCR	71.3		P	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.2
Batch ID: P333715

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1938972	GULL2-qPCR	99.3		P	50 - 300
1938973	GULL2-qPCR	98.7		P	50 - 300

Reference Method: SOP-PCR-1.3
Batch ID: P334951

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1938091	GFD-purified-qPCR	82.1		P	50 - 175
1938841	GFD-purified-qPCR	66.4		P	50 - 175
1938972	GFD-purified-qPCR	46.4		F	50 - 175
1939201	GFD-purified-qPCR	48.6		F	50 - 175
1944329	GFD-purified-qPCR	21.6		F	50 - 175
1944330	GFD-purified-qPCR	18.3		F	50 - 175
1944815	GFD-purified-qPCR	53.7		P	50 - 175
1945751	GFD-purified-qPCR	57.8		P	50 - 175
1946394	GFD-purified-qPCR	122	27.6	P/F	50 - 175
1946395	GFD-purified-qPCR	9.14		F	50 - 175
1946396	GFD-purified-qPCR	57.8		P	50 - 175
1946397	GFD-purified-qPCR	21.8		F	50 - 175
1946398	GFD-purified-qPCR	15.2		F	50 - 175
1946905	GFD-purified-qPCR	58.0		P	50 - 175
1946907	GFD-purified-qPCR	30.1		F	50 - 175
1946908	GFD-purified-qPCR	27.0		F	50 - 175

Reference Method: SOP-PCR-1.4
Batch ID: P333715

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1938841	BacR-qPCR	54.2		P	50 - 175
1938972	BacR-qPCR	58.3		P	50 - 175

Quality Assurance Report Precision

Reference Method: SOP-PCR-1.0
Batch ID: P333715

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1938842	HF183-qPCR	23.2	Spike	P	0 - 25
1943571	HF183-qPCR	5.40	Spike	P	0 - 25

Reference Method: SOP-PCR-1.2
Batch ID: P333715

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1940858	GULL2-qPCR	0.240	Spike	P	0 - 25

Quality Assurance Report Precision

Reference Method: SOP-PCR-1.3
 Batch ID: P334951

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1946394	GFD-purified-qPCR	13.5	Sample	P	0 - 25

* Sample, spike and/or laboratory control sample precision (LCS) is reported.
 Replicate spike precision may be reported when sample results are below quantifiable levels.

Quality Assurance Report Surrogates

Lab Sample ID: 1938972
 Field Sample ID: G1SW0061

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	91.7	P	50 - 300
SOP-PCR-1.2	SKETA-qPCR	92.7	P	50 - 300
SOP-PCR-1.4	SKETA-qPCR	80.6	P	50 - 300

Lab Sample ID: 1938973
 Field Sample ID: G1SW0063

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	89.9	P	50 - 300
SOP-PCR-1.2	SKETA-qPCR	95.8	P	50 - 300

Lab Sample ID: 1938974
 Field Sample ID: G1SW0057

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	85.3	P	50 - 300

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery			MS % Recovery			LCS	Precision SMP	MS
SOP-PCR-1.0	HF183-qPCR	117	90.4	88.9	83.1	92.8	102			23.2 5.40
		105			80.5					
SOP-PCR-1.2	GULL2-qPCR	143	98.8		99.3	98.7				0.240
SOP-PCR-1.3	GFD-purified-qPCR	26.7	149		21.6	18.3	53.7		13.5	
					57.8					
SOP-PCR-1.4	BacR-qPCR	129	113		54.2	58.3				

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
SOP-PCR-1.0 / E31780	Detection and quantification of human-specific HF183 Bacteroides genetic marker with quantitative polymerase chain reaction	1938972, 1938973, 1938974
SOP-PCR-1.2 / E31780	Detection and quantification of coastal bird specific Catellicoccus marimammalium Gull2 genetic marker with quantitative polymerase chain reaction	1938972, 1938973
SOP-PCR-1.3 / E31780	Detection and quantification of bird specific Helicobacter GFD genetic marker with quantitative polymerase chain reaction	1938972

Reference Method Descriptions

Method / DoH Cert #	Description	<u>Associated Samples</u>
SOP-PCR-1.4 / E31780	Detection and quantification of Ruminant specific Bacteroidetes BacR genetic marker with quantitative polymerase chain reaction	1938972
SOP-PCR-4.0 / E31780	Preparation of Samples by Filtration and held for qPCR Analysis	1938972, 1938973, 1938974

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
SOP-PCR-1.0	10/20/2017	10/20/2017 12:30	Sarah Menz	11/03/2017	Sarah Menz	1938972, 1938973, 1938974
SOP-PCR-1.2	10/20/2017	10/20/2017 12:30	Sarah Menz	11/08/2017	Sarah Menz	1938972, 1938973
SOP-PCR-1.3	10/20/2017	10/20/2017 12:30	Sarah Menz	11/22/2017	Sarah Menz	1938972
SOP-PCR-1.4	10/20/2017	10/20/2017 12:30	Sarah Menz	11/20/2017	Sarah Menz	1938972
SOP-PCR-4.0	10/20/2017	10/20/2017 12:30	Sarah Menz	11/14/2017	Puja Jasrotia	1938972, 1938973, 1938974